Release Notes for Cisco SN 5428-2 Storage Router, Release 3.5.1

March 5, 2004

These release notes support Cisco SN 5428-2 Storage Router software release 3.5.1.

For a list of software caveats that apply to Release 3.5.1, see the "Caveats" section. The caveats are updated for every maintenance release and are located on Cisco.com and the Documentation CD-ROM.

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Corporate Headquarters:
Cisco Systems, Inc., 170 West Tasman Drive, San Jose, CA 95134-1706 USA

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Introduction

The Cisco SN 5428-2 Storage Router provides universal access to storage over IP networks. The storage router software controls the operation of the Cisco SN 5428-2 Storage Router. You can configure the software to provide the following types of access to storage over IP networks:

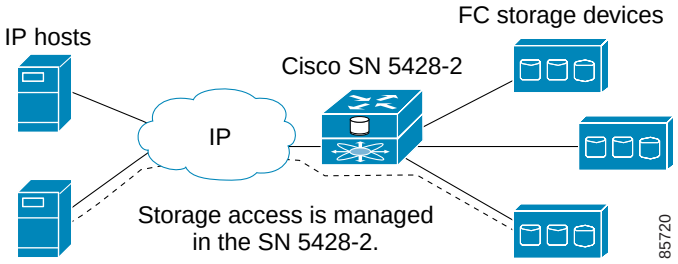
- SCSI routing only
- Transparent SCSI routing only
- FCIP only
- SCSI routing and FCIP
- Transparent SCSI routing and FCIP

SCSI routing provides IP hosts with access to Fibre Channel (FC) storage devices, using iSCSI protocol. The iSCSI protocol is an IETF-defined protocol for IP storage (ips).

Note For more information about the iSCSI protocol, refer to the IETF standards for IP storage at http://www.ietf.org.

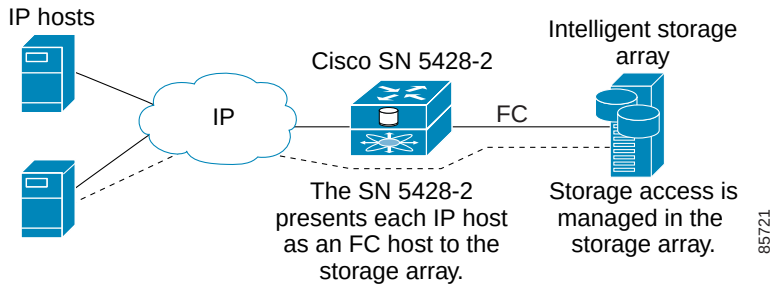
With SCSI routing, storage device access is managed primarily in the SN 5428-2. (See Figure 1.)

Figure 1 SCSI Routing



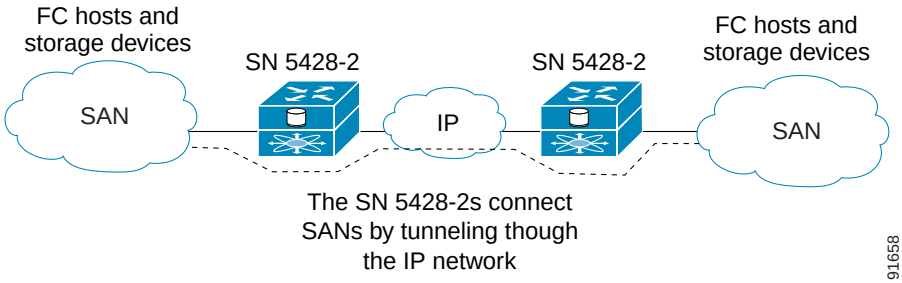
Transparent SCSI routing provides IP hosts with transparent access to intelligent storage arrays using iSCSI protocol; that is, each IP host is presented as an FC host to an intelligent storage array. With transparent SCSI routing, availability of storage devices is managed primarily in the intelligent storage array. (See Figure 2.)

Figure 2 Transparent SCSI Routing


IP hosts
Intelligent storage array
Cisco SN 5428-2
IP
FC
The SN 5428-2 presents each IP host as an FC host to the storage array.
Storage access is managed in the storage array.
85721

Fibre Channel over IP (FCIP) enables SN 5428-2 Storage Routers to provide connectivity by tunneling through an IP network between storage area networks (SANs). (See Figure 3.)

Figure 3 FCIP



In addition to providing services for accessing storage over IP networks, the SN 5428-2 Storage Router software provides the following services:

- VLAN Access Control—provides IP access control to storage based on a VLAN identifier (VID) number (in addition to access control through access lists)
- Authentication—provides iSCSI, Enable and Login authentication using AAA authentication methods
- High Availability (HA)—provides the ability to group storage routers in a cluster for intelligent failover and other cluster-related functions (for SCSI routing only)
- E_Port with FC Fabric Zoning—provides the ability to connect FC ports to FC switches and participate in fabric zoning, manage zoning, and support zone mergers
- SNMP/MIB support—provides network management of the SN 5428-2 through SNMP using selected MIBs
- Gigabit Ethernet Interface features—provides the ability to assign a management IP address per Gigabit Ethernet interface, multiple IP addresses per SCSI routing instance, and an optional secondary Gigabit Ethernet interface per IP address used for SCSI routing or SN 5428-2 management. When the SN 5428-2 is deployed for FCIP, provides primary and optional secondary Gigabit Ethernet interfaces to the FCIP peer.
- FCIP data compression—enables the SN 5428-2 to dynamically compress FCIP data traffic for better channel bandwidth utilization
- FCIP SACK support—uses selective acknowledgement (SACK) to overcome the limitations of recovering from multiple lost packets during a TCP transmission for FCIP instances configured as TCP clients or servers
- Buffer credit extension—enables the SN 5428-2 to donate buffer credits from a donor port to selected FC ports
- Secure Sockets Layer (SSL) support—provides HTTPS connection for secure access through the web-based GUI
- Secure Shell (SSH) protocol version 2 support—provides high encryption and authentication for interactive management sessions, and is a common replacement for Telnet
- Routing Information Protocol (RIP) listening support—allows the SN 5428-2 to learn dynamic routing using RIP (version 1 or version 2) listening
- Service Location Protocol (SLP) support—provides the ability to advertise targets of specified SCSI routing instances to initiators or servers that use SLP
- Internet Storage Name Service (iSNS) support—provides the ability to register iSCSI targets with an iSNS server, allowing iSCSI initiators to dynamically discover available storage targets

- LUN Trespass feature—provides a LUN failover feature for selected storage arrays that operate on the active/passive port model. When enabled, the trespass feature provides a redundant path from the storage router to the storage array by allowing the storage router to detect a path failure to a storage array port and perform the necessary operations to fail LUNs over to the other port on the storage array without using any multi-path software. See the "LUN Trespass Feature" section on page 6 for details about storage array interoperability.
- TCP Window Tuning—provides the ability to maximize bandwidth across the network by automatically setting the local TCP receive window size to the remote TCP receive window size without user intervention
- A command-line interface (CLI) and a web-based GUI—provides user interfaces for configuration and maintenance of an SN 5428-2

System Requirements

This section describes the system requirements for release 3.5.1 and includes the following information:

- Network Equipment, page 4
- IP Hosts, page 4
- Graphical User Interface, page 5
- iSCSI Driver Version Support, page 5
- Interoperability Information, page 5

Network Equipment

- The Gigabit Ethernet interfaces on the SN 5428-2 Storage Router use a flow control mechanism for stopping and starting traffic that prevents the loss of data. Flow control should also be turned on at the router's Gigabit Ethernet interfaces where the SN 5428-2 Storage Router is connected.
- If the SN 5428-2 Storage Router is participating in a cluster (SCSI routing only), and the HA or management interfaces are plugged into a switch that has Spanning Tree Protocol (STP) enabled, the storage router should be considered as an end station and the affected ports on the switch should be configured appropriately. For example, set "portfast" on Cisco switches to cause the ports to immediately switch from blocking mode to forwarding mode. This helps prevent time-outs, which can cause unexpected behavior when storage routers join a cluster.

IP Hosts

To ensure the best performance for the SN 5428-2 Storage Router and the iSCSI drivers, the extended windowing feature of TCP and the receive and transmit flow control feature of the Gigabit Ethernet driver should be enabled on all IP hosts connecting to the SN 5428-2. On the SN 5428-2 Storage Router, you can use the CLI **show scsirouter all connection tcp** command to display the current and maximum TCP window size for each connected host.

Graphical User Interface

The SN 5428-2 Storage Router web-based GUI officially supports the following browsers. The browser must be enabled to support JavaScript and style sheets.

Browser	Platform
Microsoft Internet Explorer version 5.5 with service pack 2, or later **Note** To use the HTTP Put File function to update software, you must use Microsoft Internet Explorer version 6.0 or later	Microsoft Windows NT 4.0, Microsoft Windows 2000
Netscape Navigator version 4.76	Linux
Netscape Navigator version 4.7	Sun Solaris

Note With certain versions of Microsoft Internet Explorer 6, the links in the left frame may fail to function after performing a remote backup. If this occurs, click on the Maintenance menu link at the top of the page to reactivate the links.

iSCSI Driver Version Support

A Cisco SN 5428-2 Storage Router running software release 3.5.1 or later is interoperable with an IP host running any Cisco iSCSI Driver version 2.1.1 or later. It is not interoperable with an IP host running any Cisco iSCSI Driver version 1.8.x.

A Cisco SN 5428-2 Storage Router running software release 3.5.1 or later is also interoperable with an IP host running Microsoft Windows® 2000, Microsoft Windows XP, or Microsoft Windows Server™ 2003 and the Microsoft iSCSI Software Initiator package, version 1.03 or higher. You can download the Microsoft iSCSI Software Initiator package, which includes the Microsoft iSCSI initiator service and the Microsoft iSCSI Initiator software driver, from http://www.microsoft.com/windowsserversystem/storage/technologies/iscsi/default.mspx.

Interoperability Information

SN 5428-2 interoperability information is available on Cisco.com. You can access the interoperability matrix by following these instructions:

Step 1 At http://www.cisco.com, click **Products & Solutions**, and select **Storage Networking** and **SN 5400 Series Storage Routers** from the menus.

Step 2 At the Cisco SN 5400 Series Storage Routers web page, click **Technical Documentation** from the navigation menu on the left side of the page.

Step 3 Click the **Tech Notes** link, and then click the **Cisco SN 5428 and SN 5428-2 Interoperability Matrix** link.

LUN Trespass Feature

The SN 5428-2 LUN trespass feature provides LUN failover capability for selected storage arrays that operate on the active/passive port model.The trespass feature has been tested with the following storage arrays:

- EMC Clarion 4500/4700
- EMC Clarion Cx400
- HP MSA1000, with firmware version 4.24

Installation Notes

This section describes how to obtain updated SN 5428-2 software and upgrade an existing SN 5428-2 software installation, and includes the following information:

- Obtaining Updated Software and iSCSI Drivers, page 6
- Determining the SN 5428-2 Software Version, page 7
- Upgrading to a New Software Release, page 7

Obtaining Updated Software and iSCSI Drivers

Registered Cisco.com users can download the most current SN 5400 Series system software, Cisco iSCSI drivers, readme files and release notes from Cisco.com. In addition, information about driver compatibility and other relevant driver information is available on Cisco.com. You can access software and related information by following these instructions:

Step 1 At http://www.cisco.com, log in to Cisco.com. Click **Technical Support** and **Software Center**.

Step 2 At the Software Center web page, under Software Products & Downloads, click **Storage Networking Software**.

Step 3 At the Storage Networking Software web page, click the appropriate link for your software.

Step 4 At the Software Download web page, click the file that you want to download. Another software download web page will be displayed with detailed information about the download file and Cisco's Software License Agreement. Follow the instructions on that and any subsequent web pages to download the software.

Step 5 To install and configure storage router software, see the appropriate storage router software configuration guide and release notes. To install and configure an iSCSI driver, see the readme file that accompanies the iSCSI driver (in the downloaded driver archive file) and the appropriate release notes.

Determining the SN 5428-2 Software Version

To determine the version of SN 5428-2 software running on the Cisco SN 5428-2 Storage Router, establish a Telnet or console port session with the storage router, and enter the CLI **show version** command. (See Example 1.) The Application field displays the version of software currently running on the storage router. The System Bootstrap field displays the software version that will run the next time the storage router is restarted.

You can also check the version of the SN 5428-2 software by using the SN 5428-2 web-based GUI. Log in as **monitor** to display the Processor and Software Information table, or click **Processor and SW** (under System**)** in the Monitor dynamic menu list in the left frame. The Software Version field contains the current software version information.

Example 1 Determining the Software Version

```
[SN5428-2A01]$ show version
Cisco SN 5428-2-K9 Storage Router

         CLI Version: 2.1
       iSCSI Version: 0/2 (Min/Max)
    System Bootstrap: 3.5.1-K9
    Operating System: 3.5.1-K9
      Switch Version: V1.5.1.10-0
         Application: 3.5.1-K9
          Web Server: R6_1_0
             OpenSSH: 3.4p1
             OpenSSL: 0.9.6e
                Zlib: 1.1.4

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```

Upgrading to a New Software Release

For information about upgrading to new SN 5428-2 software using the CLI, see the section “Installing Updated Software” in Chapter 11, “Maintaining and Managing the SN 5428-2 Storage Router,” of the *Cisco SN 5428-2 Storage Router Software Configuration Guide, Release 3.5*.

To upgrade to new SN 5428-2 software using the web-based GUI, follow these instructions.

Step 1 In the web-based GUI, log in as “admin”. To access the GUI, enter the URL for the SN 5428-2 by pointing your browser to the SN 5428-2 management interface IP address using the HTTP protocol (for example, type **http://10.1.10.244**).

Step 2 Click **Maintenance** to view information about the software versions currently available to the storage router. If multiple versions of software are available, delete all versions except the currently running version.

Step 3 (Optional) Based on your storage router configuration, click the appropriate link in the Upgrade section of the **Maintenance** dynamic menu list in the left frame to download a list of currently available software versions. Use this list to determine the software version you want to download.

Step 4 Click the appropriate link in the Upgrade section of the **Maintenance** dynamic menu list to download the desired version of software.

Step 5 After you have downloaded the new version of software, click **Reset** in the System section of the **Maintenance** dynamic menu list.

Step 6 At **Select next boot version**, select the new software version. If you have made configuration changes to the storage router that have not been saved, click the **Save unsaved changes?** checkbox to save any configuration changes that have been made but not saved to the storage router's bootable configuration

Step 7 Click **Reset System**.

Step 8 After the storage router has rebooted, verify that it is running the new software. (See the "Determining the SN 5428-2 Software Version" section on page 7.)

If the storage router is deployed for transparent SCSI routing, the upgrade to version 3.5.1 from any version prior to 3.3.1 places the storage router in dynamic mode. Dynamic mode resets iSCSI client-to-FC WWPN bindings upon reboots or iSCSI logouts, and requires an intelligent storage array that supports an extended iSCSI FC PLOGI frame. To change the mode of an existing transparent SCSI routing deployment, you must completely clear the storage router configuration. When the storage router reboots, follow the prompts from the initial configuration script to complete the new system configuration and select the desired mode for transparent SCSI routing.

For more information about clearing the storage router configuration, see the section "Resetting the System" in Chapter 11, "Maintaining and Managing the SN 5428-2 Storage Router," of the *Cisco SN 5428-2 Storage Router Software Configuration Guide, Release 3.5*.

For more information about static and dynamic modes for transparent SCSI routing, see the section "Summary of Configuration Process" in Chapter 7, "Configuring Transparent SCSI Routing," of the *Cisco SN 5428-2 Storage Router Software Configuration Guide, Release.3.5*.

Uninstalling an Upgrade

Note Software versions prior to 3.3.1 do not support the static mode for transparent SCSI routing.

To return to a previous SN 5428-2 software release, and remove the updated SN 5428-2 software using the CLI, follow these instructions:

	Command	Description
Step 1	**enable**	Enter Administrator mode
Step 2	**show software version all**	Verify that the previous version of SN 5428-2 software is still available. If it is not, see the section "Installing Updated Software" in Chapter 11, "Maintaining and Managing the SN 5428-2 Storage Router," of the *Cisco SN 5428-2 Storage Router Software Configuration Guide, Release 3.5*.
Step 3	**software version** *3.4.1*	Select the software to be booted when the system next starts — for example, boot version 3.4.1 — when the system restarts. This may take several minutes.
Step 4	**reboot**	Reboot the SN 5428-2 Storage Router. **Caution** Do not use the **reboot fast** command. Downgrading software requires a reboot with diagnostics.
Step 5	**enable**	Enter Administrator mode after the SN 5428-2 reboots.

	Command	Description
Step 6	**show version**	Verify that the SN 5428-2 Storage Router is now running the correct software.
Step 7	**delete software version** *3.5.1*	(Optional) Remove the updated software from the SN 5428-2 Storage Router.

To return to a previous SN 5428-2 software release and remove the updated SN 5428-2 software using the SN 5428-2 web-based GUI, follow these instructions:

Step 1 In the web-based GUI, log in as "admin". To access the GUI, enter the URL for the SN 5428-2 by pointing your browser to the SN 5428-2 management interface IP address using the HTTP protocol (for example, type **http://10.1.10.244**).

Step 2 Click **Maintenance** to display the dynamic Maintenance menu list in the left frame.

Step 3 Click **Reset** from the dynamic Maintenance menu list.

Step 4 Click the **Select next boot version** drop-down arrow to view the list of available software versions. Choose the version of software to run when the system is booted.

Step 5 (Optional) To save configuration changes before rebooting, check the **Save unsaved changes** checkbox. If the checkbox is not checked, any unsaved configuration changes will be lost.

Step 6 Click **Reset System**.

Step 7 After the SN 5428-2 reboots, verify that it is running the selected software. (See "Determining the SN 5428-2 Software Version" section on page 7.)

Step 8 (Optional) Click **Maintenance** and then click the **Delete** link to the right of the updated software in the Show Storage Router Software table to remove it from the SN 5428-2 Storage Router.

New and Changed Information

This section describes new and changed features in Release 3.5.1, and includes the following information:

- New Features, page 9
- New CLI Commands, page 10
- Modified CLI Commands, page 10

New Features

- Support for additional systems as FCIP peers—enables the SN 5428-2 to interoperate with a Cisco 7200 VXR or 7401ASR router configured for FCIP with the PA-FC-1G Fibre Channel port adapter
- FCIP SACK support—uses selective acknowledgement (SACK) to overcome the limitations of recovering from multiple lost packets during a TCP transmission for FCIP instances configured as TCP clients or servers

New CLI Commands

- **clear debug**: Removes an iSCSI trace capture from system memory.
- **debug iscsitrace default**: Sets the default iSCSI trace parameters.
- **debug scsirouter target iscsitrace**: Enables trace facilities for debugging iSCSI connections on a per-target basis.
- **show debug iscsitrace defaults**: Displays the default PDU and trace buffer size to be used for iSCSI tracing.
- **slp enable**: Enables Service Location Protocol (SLP) service on the storage router.

Modified CLI Commands

- **fcip destination config**: The **usesack** and **pacingrate** keywords were added, the **idlepingdelay** default was changed to 15, and the default TCP receive window (**rxtcpwinsize**) was increased to 1048576.
- **restore system**: The **slp** and **rip** keywords were added, and RIP settings were removed from the **ip-route** keyword.
- **show debug scsisouter**: The **show debug scsirouter target iscsitrace** command syntax was added

Limitations and Restrictions on SN 5428-2 Storage Router Clusters

This release includes the following restrictions on SN 5428-2 Storage Router clusters:

- A cluster can be composed of up to two SN 5428-2 Storage Routers, or one SN 5428-2 and one SN 5428 Storage Router.
- A cluster can support up to 12 SCSI routing instances.
- A cluster can support up to 100 iSCSI targets.

Caveats

Caveats describe unexpected behavior or defects in the specified SN 5428-2 software release. Severity 1 caveats are the most serious caveats; severity 2 caveats are less serious.

This document describes open and resolved severity 1 and 2 caveats and selected caveats of other severities, for release 3.5.1.

- The "Open Caveats" section lists caveats that are open in the current release and may be open in previous releases.
- The "Resolved Caveats" section lists caveats that are resolved in this release, but open in previous releases.

Within the sections, the caveats are sorted alphanumerically by caveat number.

Note If you have an account with Cisco.com, you can use Bug Navigator II to find caveats of any severity for any release. You can reach Bug Navigator II on Cisco.com at Service & Support: http://www.cisco.com/cgi-bin/Support/Bugtool/launch_bugtool.pl.

Open Caveats

The caveats listed in this section are open in SN 5428-2 software release 3.5.1.

SCSI

- CSCin43529

  Compaq SecurePath Manager software does not work with iSCSI and an MSA1000. This configuration is not currently supported.

  Workaround: None.

Resolved Caveats

GbE-Driver

- CSCed54737

  The Gigabit Ethernet receive buffer is lost after receipt of an iSCSI text message. As a result, the Gigabit Ethernet will terminate iSCSI connections and they will not be able to reconnect, giving the appearance that the storage router is hung.

  Workaround: None. This problem is resolved in software release 3.5.1.

Related Documentation

The following sections describe the related documentation available for Cisco SN 5428-2 Storage Router release 3.5.1. These documents consist of hardware installation and software configuration guides, and platform-specific release notes and readme files for the Cisco iSCSI drivers.

Release-Specific Documents

This release notes document is the only document specific to SN 5428-2 release 3.5.1. It is only available as an electronic document on Cisco.com and the Documentation CD-ROM.

Platform-Specific Documents

Platform-specific documents consist of the release notes and readme files for Cisco iSCSI Drivers, version 2.1.x or later The files are available in electronic format only. See the "Obtaining Updated Software and iSCSI Drivers" section on page 6 for details.

Hardware Documents

Refer to the *Cisco SN 5428-2 Storage Router Hardware Installation Guide* for hardware installation procedures. This document is available as an electronic document on Cisco.com and the Documentation CD-ROM.

Software Documents

Refer to the *Cisco SN 5428-2 Storage Router Software Configuration Guide Release 3.5*, for configuration information and procedures. This document is available as an electronic document on Cisco.com and the Documentation CD-ROM.

Refer to the *Cisco SN 5400 Series Storage Router Command Reference, Release 3.5*, for information about the CLI command interface. This document is available as an electronic document on Cisco.com and the Documentation CD-ROM.

For documentation on the SN 5428-2 web-based GUI, refer to the SN 5428-2 Storage Router web-based GUI online Help system.

Service and Support

For service and support for a product purchased from a reseller, contact the reseller, who offers a wide variety of Cisco service and support programs described in “Service and Support” of Cisco Information Packet shipped with your product.

Note If you purchased your product from a reseller, you can access Cisco.com as a guest. Cisco.com is Cisco Systems' primary real-time support channel. Your reseller offers programs that include direct access to Cisco.com services.

For service and support for a product purchased directly from Cisco, use Cisco.com.

Software Configuration Tips on the Cisco TAC Home Page

A variety of Cisco SN 5428-2 Storage Router software installation, configuration and usage tips are available on the Cisco Technical Assistance Center (TAC) Web Site.

You can access “tech tips” by following these instructions:

Step 1 At http://www.cisco.com, log in to Cisco.com. Click **Technical Support**, and select **Hardware Support** from the menu.

Step 2 At the Hardware Support web page, click **Storage Networking Devices** from the Hardware Support menu on the left side of the page.

Step 3 At the Storage Networking Devices web page, click the appropriate link for your system. For example, click the **SN 5428-2 Storage Routers** link.

Step 4 Click the **Troubleshooting** link, and then click the appropriate links for information about installing, configuring, and troubleshooting SN 5400 Series system software and iSCSI drivers.

Obtaining Documentation

Cisco documentation and additional literature are available on Cisco.com. Cisco also provides several ways to obtain technical assistance and other technical resources. These sections explain how to obtain technical information from Cisco Systems.

Cisco.com

You can access the most current Cisco documentation on the World Wide Web at this URL:

http://www.cisco.com/univercd/home/home.htm

You can access the Cisco website at this URL:

http://www.cisco.com

International Cisco websites can be accessed from this URL:

http://www.cisco.com/public/countries_languages.shtml

Ordering Documentation

You can find instructions for ordering documentation at this URL:

http://www.cisco.com/univercd/cc/td/doc/es_inpck/pdi.htm

You can order Cisco documentation in these ways:

- Registered Cisco.com users (Cisco direct customers) can order Cisco product documentation from the Ordering tool:

  http://www.cisco.com/en/US/partner/ordering/index.shtml

- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco Systems Corporate Headquarters (California, USA) at 408 526-7208 or, elsewhere in North America, by calling 800 553-NETS (6387).

Documentation Feedback

You can submit e-mail comments about technical documentation to bug-doc@cisco.com.

You can submit comments by using the response card (if present) behind the front cover of your document or by writing to the following address:

Cisco Systems
Attn: Customer Document Ordering
170 West Tasman Drive
San Jose, CA 95134-9883

We appreciate your comments.

Obtaining Technical Assistance

For all customers, partners, resellers, and distributors who hold valid Cisco service contracts, the Cisco Technical Assistance Center (TAC) provides 24-hour-a-day, award-winning technical support services, online and over the phone. Cisco.com features the Cisco TAC website as an online starting point for technical assistance. If you do not hold a valid Cisco service contract, please contact your reseller.

Cisco TAC Website

The Cisco TAC website provides online documents and tools for troubleshooting and resolving technical issues with Cisco products and technologies. The Cisco TAC website is available 24 hours a day, 365 days a year. The Cisco TAC website is located at this URL:

http://www.cisco.com/tac

Accessing all the tools on the Cisco TAC website requires a Cisco.com user ID and password. If you have a valid service contract but do not have a login ID or password, register at this URL:

http://tools.cisco.com/RPF/register/register.do

Opening a TAC Case

Using the online TAC Case Open Tool is the fastest way to open P3 and P4 cases. (P3 and P4 cases are those in which your network is minimally impaired or for which you require product information.) After you describe your situation, the TAC Case Open Tool automatically recommends resources for an immediate solution. If your issue is not resolved using the recommended resources, your case will be assigned to a Cisco TAC engineer. The online TAC Case Open Tool is located at this URL:

http://www.cisco.com/tac/caseopen

For P1 or P2 cases (P1 and P2 cases are those in which your production network is down or severely degraded) or if you do not have Internet access, contact Cisco TAC by telephone. Cisco TAC engineers are assigned immediately to P1 and P2 cases to help keep your business operations running smoothly.

To open a case by telephone, use one of the following numbers:

Asia-Pacific: +61 2 8446 7411 (Australia: 1 800 805 227)
EMEA: +32 2 704 55 55
USA: 1 800 553-2447

For a complete listing of Cisco TAC contacts, go to this URL:

http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml

TAC Case Priority Definitions

To ensure that all cases are reported in a standard format, Cisco has established case priority definitions.

Priority 1 (P1)—Your network is “down” or there is a critical impact to your business operations. You and Cisco will commit all necessary resources around the clock to resolve the situation.

Priority 2 (P2)—Operation of an existing network is severely degraded, or significant aspects of your business operation are negatively affected by inadequate performance of Cisco products. You and Cisco will commit full-time resources during normal business hours to resolve the situation.

Priority 3 (P3)—Operational performance of your network is impaired, but most business operations remain functional. You and Cisco will commit resources during normal business hours to restore service to satisfactory levels.

Priority 4 (P4)—You require information or assistance with Cisco product capabilities, installation, or configuration. There is little or no effect on your business operations.

Obtaining Additional Publications and Information

Information about Cisco products, technologies, and network solutions is available from various online and printed sources.

- Cisco Marketplace provides a variety of Cisco books, reference guides, and logo merchandise. Go to this URL to visit the company store:

  http://www.cisco.com/go/marketplace/

- The Cisco *Product Catalog* describes the networking products offered by Cisco Systems, as well as ordering and customer support services. Access the Cisco Product Catalog at this URL:

  http://cisco.com/univercd/cc/td/doc/pcat/

- *Cisco Press* publishes a wide range of general networking, training and certification titles. Both new and experienced users will benefit from these publications. For current Cisco Press titles and other information, go to Cisco Press online at this URL:

  http://www.ciscopress.com

- *Packet* magazine is the Cisco quarterly publication that provides the latest networking trends, technology breakthroughs, and Cisco products and solutions to help industry professionals get the most from their networking investment. Included are networking deployment and troubleshooting tips, configuration examples, customer case studies, tutorials and training, certification information, and links to numerous in-depth online resources. You can access Packet magazine at this URL:

  http://www.cisco.com/packet

- *iQ Magazine* is the Cisco bimonthly publication that delivers the latest information about Internet business strategies for executives. You can access iQ Magazine at this URL:

  http://www.cisco.com/go/iqmagazine

- *Internet Protocol Journal* is a quarterly journal published by Cisco Systems for engineering professionals involved in designing, developing, and operating public and private internets and intranets. You can access the Internet Protocol Journal at this URL:

  http://www.cisco.com/ipj

- Training—Cisco offers world-class networking training. Current offerings in network training are listed at this URL:

  http://www.cisco.com/en/US/learning/index.html

This document is to be used in conjunction with the documents listed in the "Related Documentation" section.

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